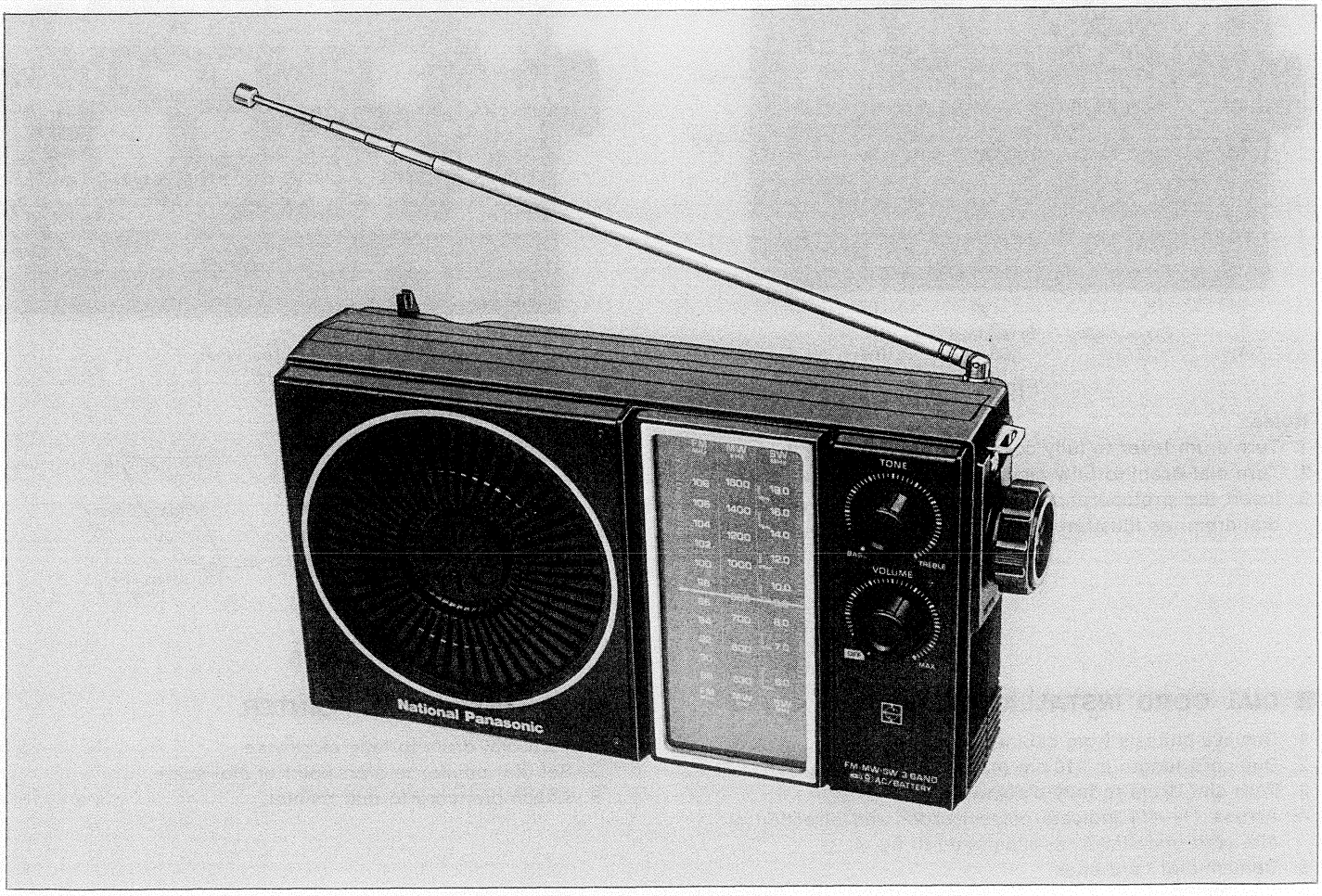
ORDER NO. RD7509-1240

Service Manual

Radio

RF-818JB

FM/MW/SW 3-BAND PORTABLE RADIO



SPECIFICATIONS

Frequency Range:	FM 87.5~108 MHz MW 520~1610 kHz (577~186m) SW 5.9~18 MHz (5.75~18.8m)
Intermediate Frequency:	FM 10.7 MHz AM (MW, SW) 455 kHz
Sensitivity:	FM 2μV for 50mW Output MW 45μV/m for 50mW Output SW 20μV/m for 50mW Output
Power Output:	1.3W Maximum
Power Source:	AC 110~125V/220~240V 50-60 Hz or 4.5V (Three "C" Size Flashlight Batteries) (National UM-2 or equivalent)
Power Consumption:	6W (AC Only)
Speaker:	9 cm ($3\frac{1}{2}$") PM Dynamic Speaker
Dimensions:	217(Wide) × 127(High) × 59(Deep) mm ($8\frac{17}{32}$" × 5" × $2\frac{5}{16}$")
Weight:	0.96 kg. (2 lb. 2 oz.) without batteries
Impedance:	Speaker .....8Ω Earphone Jack 8Ω

Specifications are subject to change without notice for further improvement.

National Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka, Japan

TO REMOVE CHASSIS

1. Remove tone and volume knobs from cabinet.
2. Remove battery cover.
3. Remove three (3) cabinet cover screws, nos. 1~3, as illustrated in fig. 1.
4. Pull out three (3) connecting sockets.

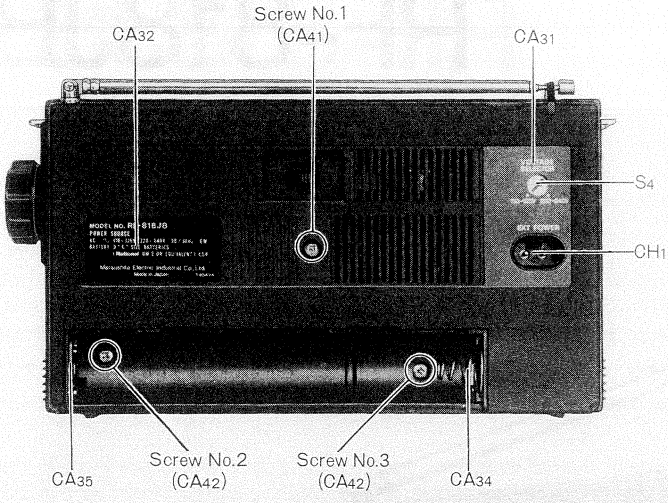


Fig. 1

Notes:

1. Turn drum lever to fully counter-clockwise.
2. Turn dial drum to fully clockwise.
3. Insert the protuberances of drum lever in the hole of dial drum, as illustrated in fig. 3.

5. Remove four (4) red chassis screws, nos. 1~4, as illustrated in fig. 2.
6. To remove chassis completely, unsolder lead wire to earphone jack and speaker terminals.
7. To reassemble, reverse the above procedure and read the following notes.

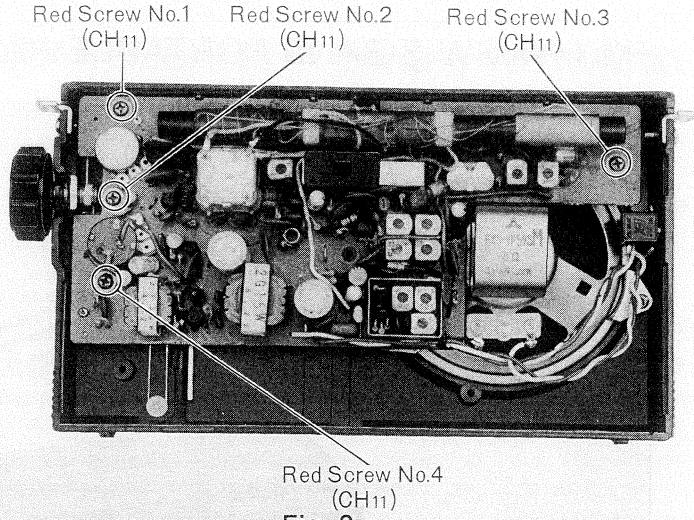


Fig. 2

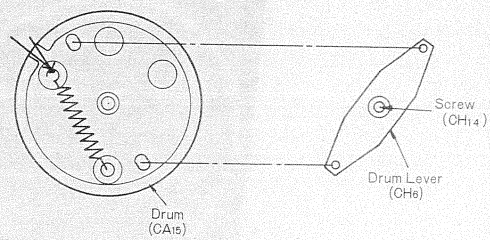


Fig. 3

DIAL CORD INSTALLATION GUIDE

1. Remove chassis from cabinet.
2. Dial cord length is 110 cm ($43\frac{5}{16}$").
3. Turn dial drum to fully clockwise.
4. Arrows (1~10) indicate correct order and direction of dial cord installation as illustrated in fig. 4.
5. Cement dial cord ends.

TO MOUNT DIAL POINTER

1. Turn dial drum to fully clockwise.
2. Set dial pointer to start point of dial scale.
3. Attach dial cord to dial pointer.

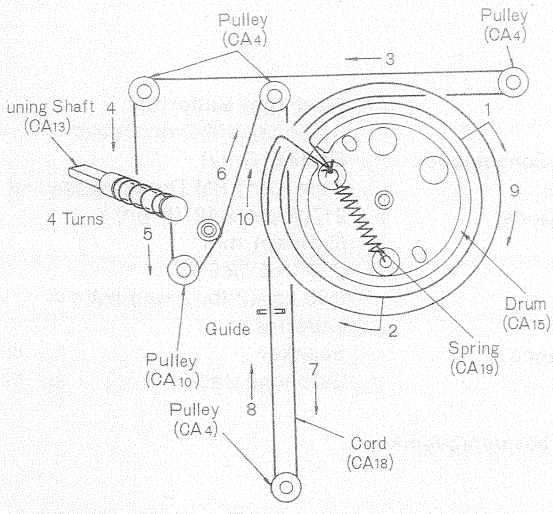
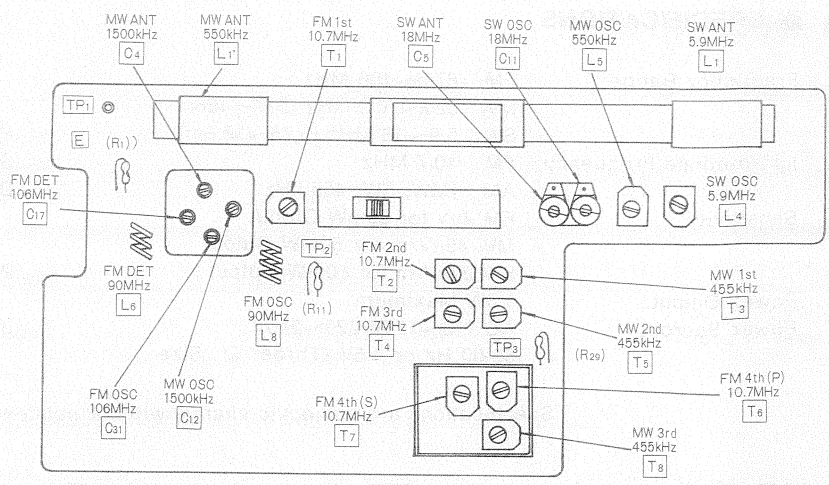
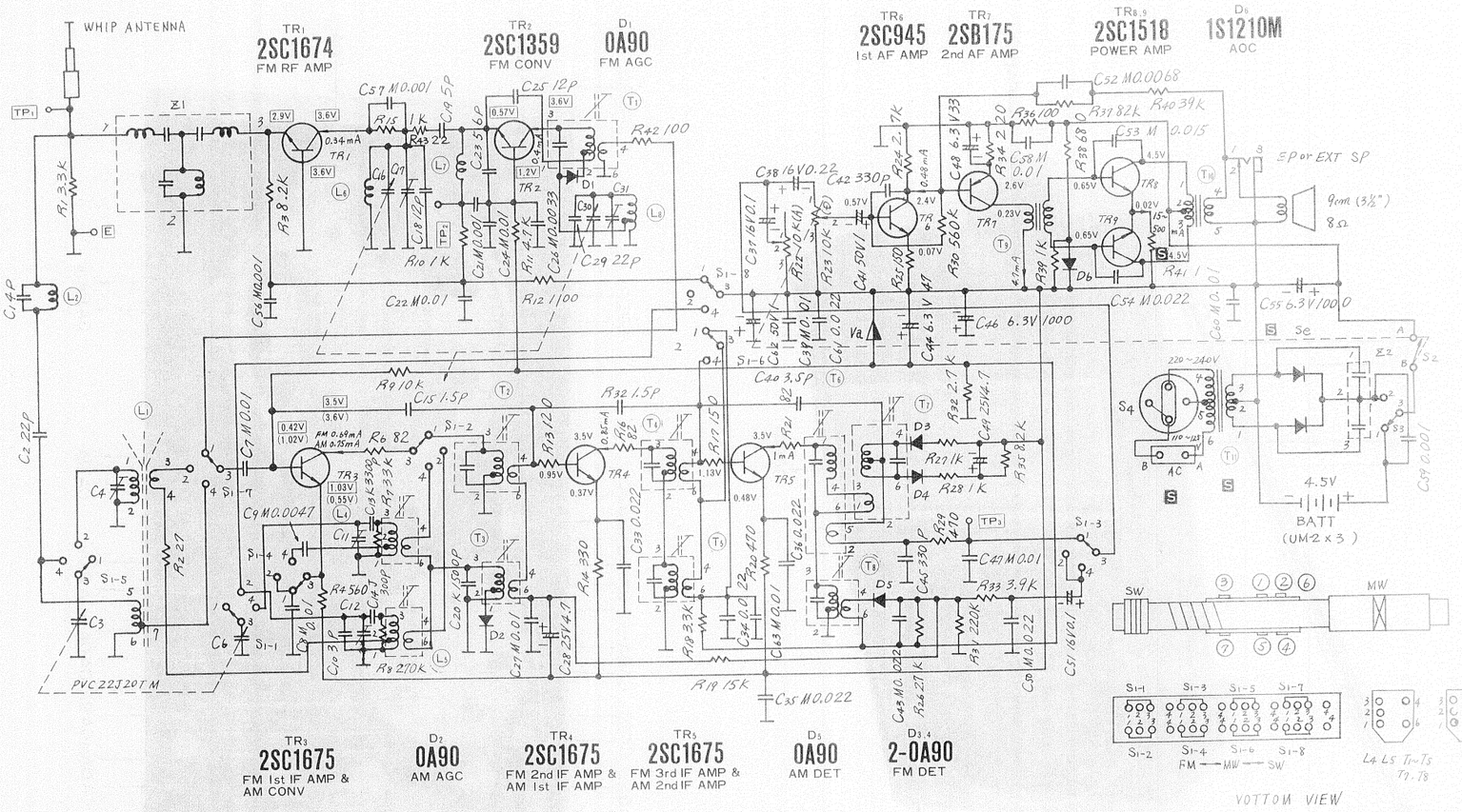


Fig. 4

ALIGNMENT POINTS



Schematic Diagram – Model RF-818JB

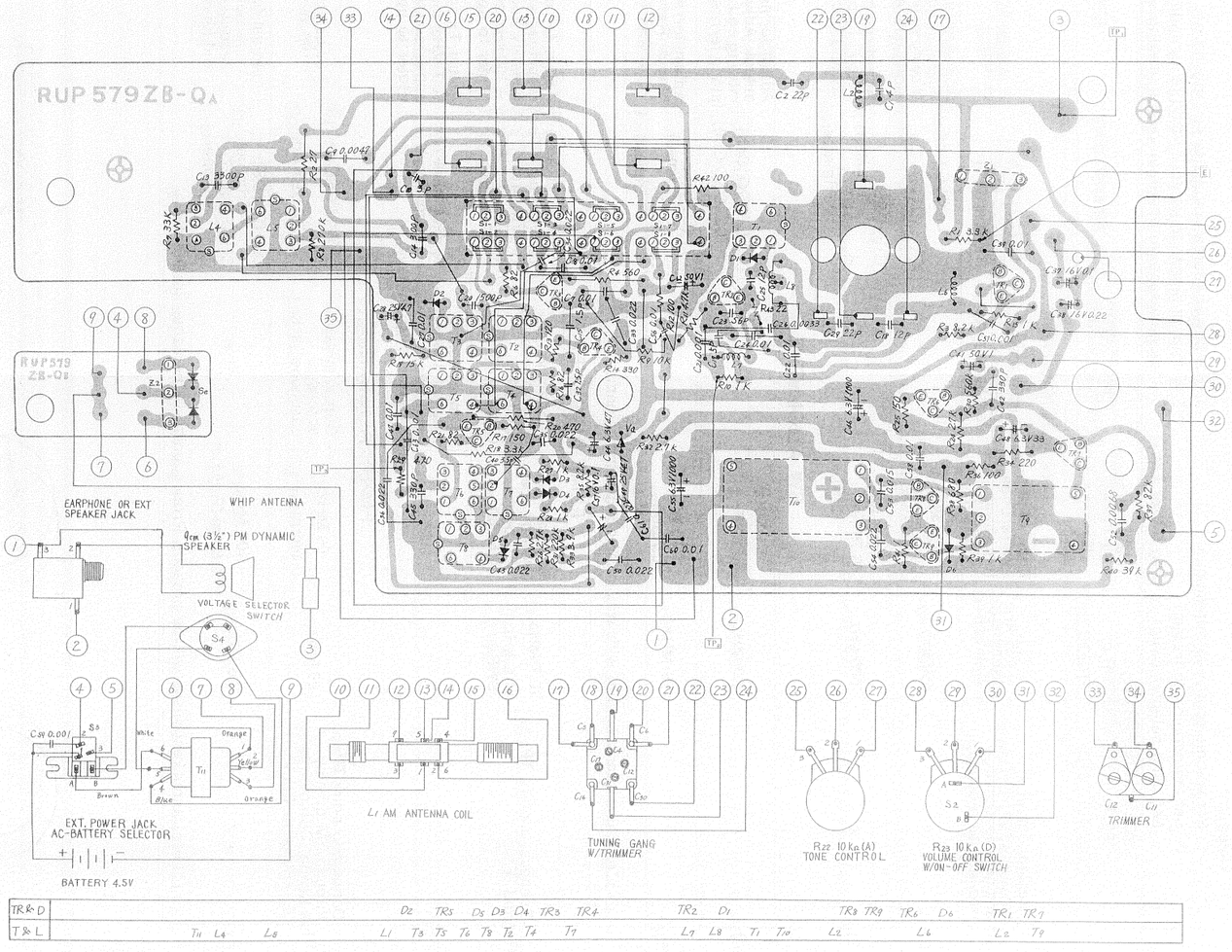


	1	56	57	15	16	17	18	19	22	23	21	24	25	26	29	30	32	31	37	62	38	40	39	41	61	42	44	48	49	58	52	53	54	60	55	59
C	2	3	4	6	7	9	8	10	11	12	13	14	20	27	28	33	34	35	63	36	43	45	47	46	50	51										
R	1	3	2	4	7	8	6	9	15	10	43	11	12	13	14	16	42	22	23	18	17	19	20	21	24	25	29	27	28	31	33					

Notes:

1. S_{1-1}~S_{1-8}: Band selector switch in "FM" position.
2. S_2: Power source switch in "OFF" position.
3. S_3: AC-Battery selector switch in "Battery" position.
4. S_4: Voltage selector switch in "220V" position.
5. DC voltage measurements are taken with circuit tester 10kΩ/V from negative terminal of battery.
   □.....FM position ( ).....AM position
6. Battery current: No signal..... 30mW
   Maximum output 450mW
7. S indicates that only parts specified by the manufacturer be used for replacement in critical circuits.

Circuit Board Wiring View – Model RF-818JB



TR1

	FM
C	3.6V
B	3.6V
E	2.9V
Ic	0.34mA

TR2

	FM
C	3.6V
B	1.2V
E	0.57V
Ic	0.4mA

TR3

	FM	AM
C	3.5V	3.6V
B	0.42V	1.02V
E	1.03V	0.55V
Ic	0.69mA	0.75mA

TR4

C	3.5V
B	0.95V
E	0.37V
Ic	0.85mA

TR5

C	3.5V
B	1.13V
E	0.48V
Ic	1mA

TR6

C	2.4V
B	0.57V
E	0.07V
Ic	0.48mA

TR7

C	0.23V
B	2.4V
E	2.6V
Ic	4.7mA

TR8,9

C	4.5V
B	0.65V
E	0.02V
Ic	15mA

TR's		D2	TR5	D5	D3	D4	TR3	TR4		TR2	D1		TR8	TR9	TR6	D6		TR1	TR7
T's & L		T11	L4	L5		L1	T3	T5	T6	T8	T2	T4	T7		L7	L8	T1	T10		L2		L6		L3	T9

ALIGNMENT INSTRUCTIONS

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Notes:

1. Set volume control to minimum.
2. Set tone control to treble.
3. Set band selector switch to MW, SW or FM.
4. Set power source voltage to 4.5 volts DC.
5. Output of signal generator should be no higher than necessary to obtain an output reading.

	SWEEP GENERATOR SIGNAL GENERATOR or CONNECTIONS	FREQUENCY	RADIO DIAL SETTING [DISTANCE]	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
	MW ALIGNMENT					
(1)	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. with 400 Hz.	Point of non-interference. (on/about 600 kHz)	Output meter across earphone jack.	T_3 (1st IFT) T_5 (2nd IFT) T_8 (3rd IFT)	Adjust for maximum output.
(2)	〃	550 kHz	550 kHz [6.98mm($\frac{9}{32}$'')]	〃	L_5(OSC Coil) (＊) L_1' (ANT Coil)	Adjust for maximum output. Adjust L_1' by moving coil bobbin along ferrite core.
(3)	〃	1500 kHz	1500 kHz [66.79mm ($2\frac{5}{8}$'')]	〃	C_{12} (OSC Trimmer) C_4 (ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
	SW ALIGNMENT					
(4)	〃	5.9 MHz	5.9 MHz [2.79mm ($\frac{1}{8}$'')]	〃	(＊1) L_1 (ANT Coil) L_4 (OSC Coil)	Adjust for maximum output. Adjust L_1 by moving coil bobbin along ferrite core.
(5)	〃	18 MHz	18 MHz [70.72mm ($2\frac{13}{16}$'')]	〃	C_{11} (OSC Trimmer) C_5 (ANT Trimmer)	Adjust for maximum output. Repeat steps (4) and (5).
	(＊)Cement antenna bobbin with wax after completing alignment.					
	FM-IF ALIGNMENT					
(6)	Connect to point **TP2** and E.	10.7 MHz (400 kHz SWP.)	Point of non-interference. (on/about 90 MHz).	Connect vert. amp. of scope to point **TP3**, Common to E.	T_1 (FM 1st IFT) T_2 (FM 2nd IFT) T_4 (FM 3rd IFT) T_6 (FM 4th IFT) (Primary)	Adjust for maximum amplitude and proper linearity between ±100 kHz markers. (Refer to fig. 5)
(7)	〃	〃	〃	Connect vert. amp. of scope to point **TP3**, Common to **E**.	T_7 (FM 4th IFT) (Secondary)	Adjust **T_7** so that 10.7 MHz marker appears at the center. (Refer to fig. 6.)
	FM-RF ALIGNMENT					
(8)	Connect to point **TP1** through FM dummy antenna. Common to E. (Refer to fig. 7).	90 MHz	90 MHz [9.14mm($\frac{11}{32}$'')]	Output meter across earphone jack.	L_8 (FM OSC Coil) L_6 (FM DET Coil)	(＊) Adjust for maximum output.
(9)	〃	106 MHz	106 MHz [62.8mm ($2\frac{5}{32}$'')]	〃	C_{31} (FM OSC Trimmer) C_{17} (FM DET Trimmer)	(＊)Adjust for maximum output. Repeat steps (8) and (9).
	(＊)Three output responses will be present; Proper tuning is the center frequency.					

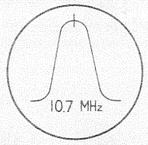


Fig. 5

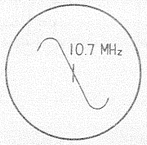


Fig. 6

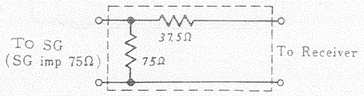
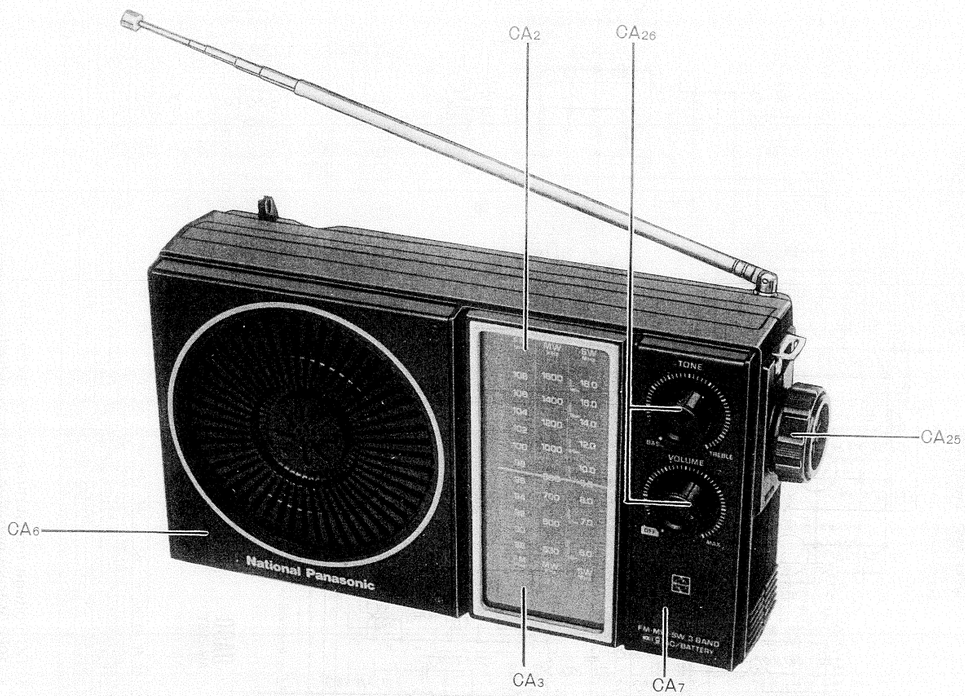
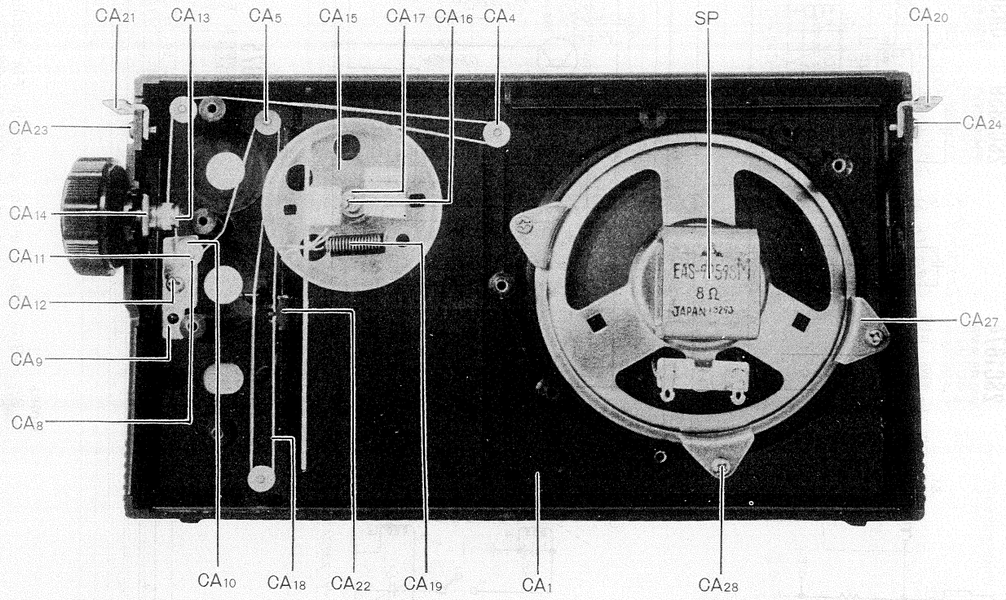


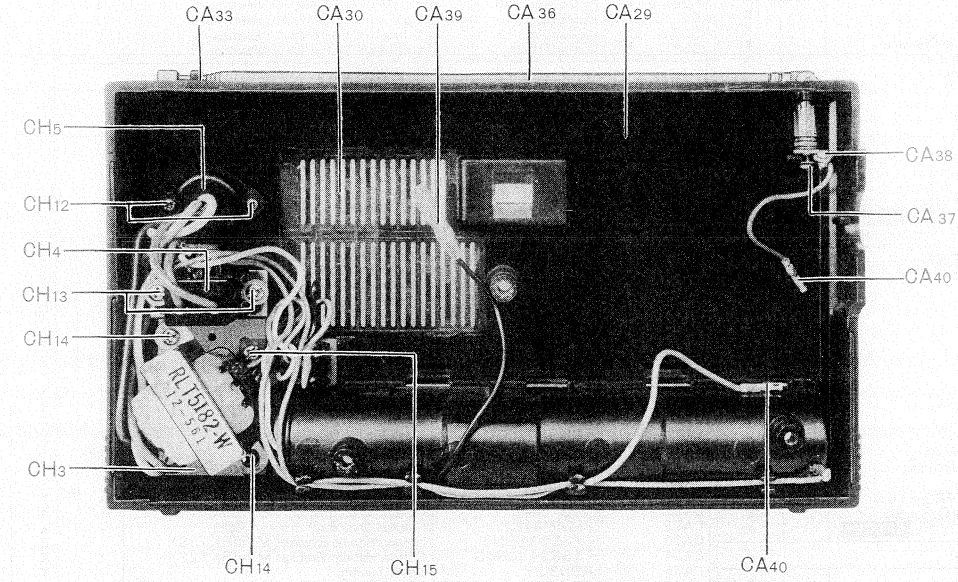
Fig. 7 FM Dummy Antenna

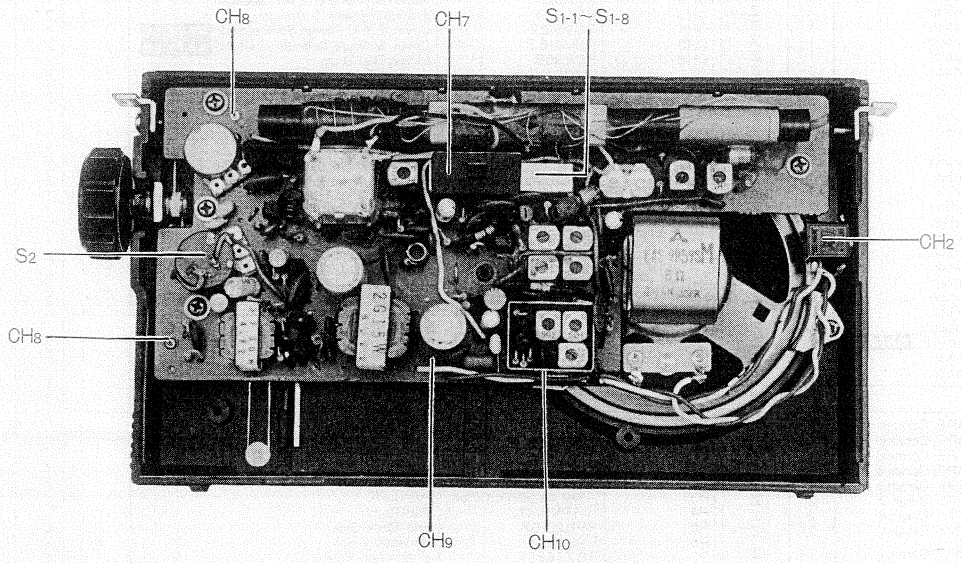
CABINET PARTS LOCATIONS



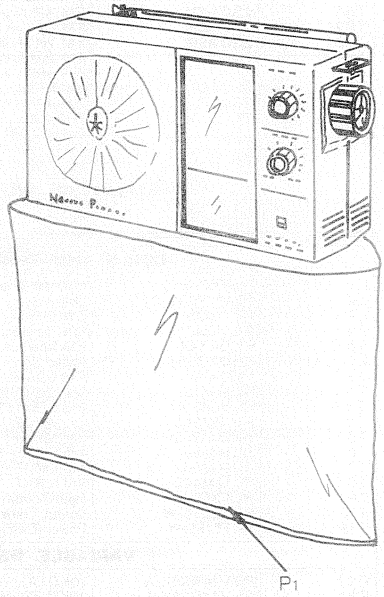


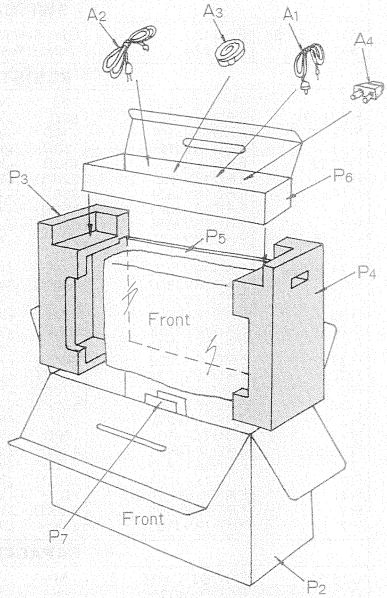
CHASSIS PARTS LOCATIONS





ACCESSORIES & PACKING PARTS LOCATIONS





REPLACEMENT PARTS LIST

NOTES:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. X—Z rank: X rank parts will cover 80% of repair needs. X+Y rank parts will cover 95% of repair needs. Z rank parts are less necessary.
3. SAFETY Indicates that only parts specified by the manufacturer be used for replacement in critical circuits.

Ref.No.	Part No.	Description	Per Set	Remarks
TRANSISTORS AND DIODES				
TR1	2SC1674	FM RF Amplifier	1	X
TR2	2SC1359	FM Converter	1	X
TR3	2SC839	FM 1st IF Amplifier & AM Converter, FM 2nd & AM 1st IF Amplifier, FM 3rd & AM 2nd IF Amplifier	1	X
TR4,5	2SC1675		2	X
TR6	2SC945	1st AF Amplifier	1	X
TR7	2SB175	2nd AF Amplifier	1	X
TR8,9	2SC1518	Power Amplifier	2	X
D1,2,5	0A90	FM/AM AGC, AM Detector	3	X
D3,4	2-0A90	FM Detector	1 Pair	X
D6	1S1210M	Operation Compensator	1	X
VARIATITE AND RECTIFIER				
Se	RVD10D1	Rectifier SAFETY	2	X
Va	EYV320D1R2J2	Variatite	1	X
COILS AND TRANSFORMERS				
L1	RLF5F78-0	MW/SW Antenna Coil	1	X ○
L2	RLQY75S5-0	Choke Coil	1	Y
L4	RL03M5	SW Oscillator Coil	1	Y
L5	RL02M7	MW Oscillator Coil	1	Y
L6	RLD4Y44	FM Antenna Coil	1	Y
L7	RLQY30S1-0	Choke Coil	1	Y
L8	RL04Y43	FM Oscillator Coil	1	Y
T1	RLI4M101	1st FM IF Transformer	1	X
T2,4	RLI4M301	2nd & 3rd FM IF Transformer	2	X
T3	RLI2M203	1st MW IF Transformer	1	X
T5	RLI2M205P	2nd MW IF Transformer	1	X
T6	RLI4M501	4th FM IF Transformer(Primary)	1	X
T7	RLI4M502	4th FM IF Transformer(Secondary)	1	X
T8	RLI2M402	3rd MW IF Transformer	1	X
T9	RLT3F30-W	Input Transformer, P=700Ω:S=1KΩ	1	X
T10	RLT2G15-W	Output Transformer, P=24Ω:S=8Ω	1	X
T11	RLT5I82-W	Power Transformer SAFETY	1	X
VARIABLE RESISTORS				
R22	RVV14A26K-A	10KΩ(A), Tone Control	1	X ○
R23	RVV14D23K-A	10KΩ(D), Volume Control, W/ON-OFF Switch(S2)	1	X
VARIABLE CAPACITORS				
C3,6,16,30	PVC22J20T2M	Variable Capacitor, W/Trimmer(C4,17,31)	1	X
C11,12	RCV2T-16M	Trimmer	1	Y
COMPONENT COMBINATIONS				
Z1	BXCFF88108M	Coils & Capacitors	1	Y
Z2	EXNF2SL04C	10000PF×2	1	Y
SPEAKER				
SP	EAS9P59SM	9cm(3½") PM Dynamic Speaker, Imp.8Ω	1	X
SWITCHES				
S1-1~S1-8	RSS123	Band Selector Switch	1	X
S4	RSR12A	Voltage Selector Switch SAFETY	1	X
RESISTORS				
R43	ERD18VJ220	22Ω, ⅛Watt, ±5%, Carbon	1	Z
R6,16,21	ERD18VJ820	82Ω, ⅛Watt, ±5%, Carbon	3	Z
R12,36	ERD18VJ101	100Ω, ⅛Watt, ±5%, Carbon	2	Z
R13	ERD18VJ121	120Ω, ⅛Watt, ±5%, Carbon	1	Z
R17,25	ERD18VJ151	150Ω, ⅛Watt, ±5%, Carbon	2	Z
R34	ERD18VJ221	220Ω, ⅛Watt, ±5%, Carbon	1	Z
R14	ERD18VJ331	330Ω, ⅛Watt, ±5%, Carbon	1	Z
R4	ERD18VJ561	560Ω, ⅛Watt, ±5%, Carbon	1	Z
R38	ERD18VJ681	680Ω, ⅛Watt, ±5%, Carbon	1	Z
R10,15,27,28,39	ERD18VJ102	1KΩ, ⅛Watt, ±5%, Carbon	5	Z
R24,26,32	ERD18VJ272	2.7KΩ, ⅛Watt, ±5%, Carbon	3	Z
R33	ERD18VJ392	3.9KΩ, ⅛Watt, ±5%, Carbon	1	Z
R11	ERD18VJ472	4.7KΩ, ⅛Watt, ±5%, Carbon	1	Z
R35	ERD18VJ822	8.2KΩ, ⅛Watt, ±5%, Carbon	1	Z
R19	ERD18VJ153	15KΩ, ⅛Watt, ±5%, Carbon	1	Z
R40	ERD18VJ393	39KΩ, ⅛Watt, ±5%, Carbon	1	Z
R37	ERD18VJ823	82KΩ, ⅛Watt, ±5%, Carbon	1	Z
R31	ERD18VJ224	220KΩ, ⅛Watt, ±5%, Carbon	1	Z
R8	ERD18VJ274	270KΩ, ⅛Watt, ±5%, Carbon	1	Z
R30	ERD18VJ564	560KΩ, ⅛Watt, ±5%, Carbon	1	Z
R2	ERD18TJ270	27Ω, ⅛Watt, ±5%, Carbon	1	Z
R42	ERD18TJ101	100Ω, ⅛Watt, ±5%, Carbon	1	Z
R20,29	ERD18TJ471	470Ω, ⅛Watt, ±5%, Carbon	2	Z
R1,18	ERD18TJ332	3.3KΩ, ⅛Watt, ±5%, Carbon	2	Z
R9	ERD18TJ103	10KΩ, ⅛Watt, ±5%, Carbon	1	Z
R41	ERX-1ANJ1R0U	1Ω, 1Watt, Wire SAFETY	1	Z
R3	ERD18VJ822	8.2KΩ, ⅛Watt, ±5%, Carbon	1	Z
R7	ERD18VJ333	33KΩ, ⅛Watt, ±5%, Carbon	1	Z
CAPACITORS				
C15,32	ECCD1H1R5C	1.5PF, 50WV, ±0.25PF, Ceramic	2	Z
C10	ECCD1H030CC	3PF, 50WV, ±0.25PF, Ceramic	1	Z
C40	ECCD1H3R5C	3.5PF, 50WV, ±0.25PF, Ceramic	1	Z
C1	ECCD1H040C	4PF, 50WV, ±0.25PF, Ceramic	1	Z
C19	ECCD1H050CC	5PF, 50WV, ±0.25PF, Ceramic	1	Z
C18,25	ECCD1H120KC	12PF, 50WV, ±10%, Ceramic	2	Z
C2,29	ECCD1H220KC	22PF, 50WV, ±10%, Ceramic	2	Z
C42,45	ECCD1H331K	330PF, 50WV, ±10%, Ceramic	2	Z
C59	ECKD1H102PF	0.001μF, 50WV, +100 0 %, Ceramic	1	Z
C21,56,57	ECKE1H102MD	0.001μF, 50WV, ±20%, Ceramic	3	Z
C26	ECKE1H332MD	0.0033μF, 50WV, ±20%, Ceramic	1	Z
C9	ECKE1H472MD	0.0047μF, 50WV, ±20%, Ceramic	1	Z
C7,8,22,24,27,39,47,58,60,63	ECKE1H103MD	0.01μF, 50WV, ±20%, Ceramic	10	Z
C33,34,36,61	ECKE1H223PF	0.022μF, 50WV, +100 0 %, Ceramic	4	Z
C52	UFD10YR682M	0.0068μF, 25WV, ±20%, Ceramic	1	Z
C23	ECMS05560K-H	56PF, 50WV, ±10%, Mica	1	Z
C50	ECQM05223MD	0.022μF, 50WV, ±20%, Mica	1	Y
C35,43	ECQG05223MZ-T	0.022PF, 50WV, ±20%, Polyester	2	Z
C20	ECQS05152KZ	1500PF, 50WV, ±10%, Styrol	1	Z
C13	ECQS05332KZ	3300PF, 50WV, ±10%, Styrol	1	Z
C14	ECQS1301JZ	300PF, 125WV, ±5%, Styrol	1	Z
C53	ECFE1E153MD-D	0.015μF, 25WV, ±20%, Ceramic	1	Z
C54	ECFD1E223MD-D	0.022μF, 25WV, ±20%, Ceramic	1	Z
C48	ECEA6V33	33μF, 6.3WV, Electrolytic	1	Y
C44	ECEA6V47	47μF, 6.3WV, Electrolytic	1	Y
C46,55	ECEA6V1000	1000μF, 6.3WV, Electrolytic	2	Y
C28,49	ECEA25V4R7	4.7μF, 25WV, Electrolytic	2	Y
C41,62	ECEA50V1	1μF, 50WV, Electrolytic	2	Y
C37,51	ECAG16ER1	0.1μF, 16WV, Electrolytic	2	Y
C38	ECAG16ER22	0.022μF, 16WV, Electrolytic	1	Y
CABINET				
	→RYMF818JBX	Cabinet Body Assembly(Black)	1	X ○
	→RYMF818JBX1	Cabinet Body Assembly(Gold)	1	X ○
CA1	Not Available Order, RYMF818JBX or RYMF818JBX1	Cabinet Body Only	(1)	
CA2		Panel, Dial	(1)	
CA3		Scale, Dial(White) ·····(Black)	(1)	
CA3		Scale, Dial(Green & Yellow) ·····(Gold)	(1)	
CA4		Pulley, Dial	(4)	
CA5		Shaft, Pulley	(4)	
		Buffle, Speaker	(1)	
CA6	RGK558X2	Ornament(Black)	1	Y ○
CA6	RGK558X1	Ornament(Gold)	1	Y ○
CA7	RGK560X1	Ornament(Black)	1	Y ○
CA7	RGK560X	Ornament(Gold)	1	Y ○
CA8	RNW150-2	Washer, Dial Pulley	2	Z
CA9	RML68Z	Bracket, Pulley Shaft	1	Z
CA10	RDR21-1	Pulley, Dial	1	Z
CA11	RDY34	Shaft, Pulley	1	Z
CA12	XTN3+8B	Screw, Pulley Shaft Bracket M'tg	1	Z
CA13	RDT9065Z	Shaft, Tuning	1	Y
CA14	RUS81B	Spring, Tuning Shaft	1	Y
CA15	RDD482A	Drum, Dial	1	Y
CA16	XTN3+6B	Screw, Dial Drum M'tg	1	Z
CA17	XWG3	Washer, Dial Drum M'tg	1	Z
CA18	RDZ05A	Cord, Dial(500m)	1 Roll	Y
CA19	RDS4090A	Spring, Dial	1	Y
CA20	RKT2S	Bracket, Handle Right M'tg	1	Y
CA21	RKT3S	Bracket, Handle Left M'tg	1	Y
CA22	RDP144Z	Pointer, Dial(Green) ·····(Black)	1	X
CA22	RDP144Z1	Pointer, Dial(Red) ·····(Gold)	1	X ○
CA23	XSB3+6BNS	Screw, Handle Bracket M'tg(RKT3S)	1	Z
CA24	XSB3+10BNS	Screw, Handle Bracket M'tg(RKT2S)	1	Z
CA25	RBN312Y	Knob, Tuning	1	Y
CA26	RBN251XK	Knob, Volume & Tone	2	Y
CA27	RMS12B	Bracket, Speaker	3	Z
CA28	XTN3+8B	Screw, Speaker Bracket M'tg	3	Z
	→RYFF818JBX	Cabinet Back Cover Assembly	1	X ○
CA29	Not Available Order, RYFF818JBX	Cabinet Back Cover Only	(1)	
CA30		Nylon Net	(1)	
CA31 (Fig.1)	RGK634Z	Indicating Plate, EXT. POWER etc. Mark	1	Y
CA32 (Fig.1)	RGT454Y	Name Plate	1	Y ○
CA33	RMA5062Z	Bracket, Whip Antenna	1	Z
CA34 (Fig.1)	RJC603Z	Spring, Battery ⊖ Side	1	Y
CA35 (Fig.1)	RJC205B	Terminal, Battery ⊕ Side	1	Y
CA36	XEARR170FESY	Whip Antenna	1	Y
	XWG3	Washer, Whip Antenna M'tg	1	Z
	XWA3B	Washer, Whip Antenna M'tg	1	Z
CA37	XSB3+10BNS	Screw, Whip Antenna M'tg	1	Z
	RKK81Z	Battery Cover	1	X
CA38	RMA55A	Terminal, Whip Antenna	1	Z
CA39	RJS17A-X	Connecting Socket	1	Y
CA40	RJS34A-X	Connecting Socket, Whip Antenna & EXT. Power Source Jack	2	Y
CA41 (Fig.1)	XTB3+35BFN	Screw, Cabinet Back Cover M'tg	1	Z
CA42 (Fig.1)	XTB3+18BFN	Screw, Cabinet Back Cover M'tg	2	Z
CHASSIS				
CH1 (Fig.1)	RJJ29Z-H	Jack, EXT. Power Source SAFETY	1	Y
CH2	RJJ10C	Jack, Earphone or EXT. Speaker	1	Y
CH3	RML64Y	Bracket, Power Transistor	1	Z ○
CH4	RUV312Z	Cover, EXT. Power Source Jack SAFETY	1	Y
CH5	RUV416Z	Cover, Voltage Selector Switch SAFETY	1	Z ○
CH6 (Fig.3)	RDE35B	Lever, Dial Drum	1	Y
	RHG5A	Rubber, Tuning Gang	1	Z
CH7	RUV289-1	Cover, Band Selector Switch	1	Z
CH8	RJP85Z	Connecting Plug, Battery ⊕ Side & Whip Antenna	2	Y
CH9	RJT352Y	Connecting Terminal, Battery ⊖ Side	1	Y
CH10	RMC192A	Shield Cover	1	Z
CH11 (Fig.2)	XTW3+10ER	Red Screw, Chassis M'tg	4	Z
CH12	XTN23+8B	Screw, Voltage Selector Switch M'tg	2	Z
	XTN3+8B	Screw, Power Transformer Bracket M'tg	1	Z
CH13	XTW3+12E	Screw, EXT. Power Source Jack M'tg	2	Z
	XSS26+5	Screw, Dial Drum Lever M'tg	1	Z
	XYN26+C6	Screw, Tuning Gang M'tg	2	Z
	XWS7AW	Washer, Volume & Tone Control M'tg	2	Z
	XNS7	Nut, Volume & Tone Control M'tg	2	Z
CH14	XTN3+6F	Screw, Power Transformer M'tg	2	Z
CH15	XTN3+10B	Screw, P.C.B M'tg	1	Z
ACCESSORIES				
A1	**XEH1A1-P**	Magnetic Earphone, 8Ω	1	Y
A2	**RJA21C**	AC Cord, EXT. Power Source SAFETY	1	Y
A3	RQC3004A	Belt	1	Y
A4	RJP120ZS-H	Plug, AC Power Source SAFETY	1	Y
PACKING				
P1	RPP166Z	Polyethylene Cover	1	Z
P2	RPK361Z	Gift Box	1	Z ○
	→RPN9141Z	Pad(Complete)	1	Z
P3	Not Available Order, RPN9141Z	Pad(Left)	(1)	
P4		Pad(Right)	(1)	
P5	RPN2010Z	Pad(Back Side)	1	Z
P6	RPE189Y	Accessory Box	1	Z
P7	RQX5888Z	Instruction Book	1	Y

QK (X)
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